

No. 8 — *The Genus Tetragnatha (Araneae, Argiopidae)*
in Jamaica, W. I.

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During my visit to Jamaica, W. I. in the fall of 1957 I made an effort to collect as many specimens of the genus *Tetragnatha* Latreille, 1884 as possible. On the basis of collections previously made by myself and others I had already (1957) been able to report six species to be present in this interesting island: *T. antillana* Simon, *T. caudata* Emerton, *T. exigua* Chickering, *T. pallescens* F. P.-Cambridge, *T. tenuissima* O. P.-Cambridge, and *T. visenda* Chickering. As a result of rather painstaking search for these animals from the middle of September, 1957, until the middle of December of the same year I can now definitely add seven species to the total number formerly known to occur in Jamaica. The complete list can now be given as follows: *T. antillana* Simon, *T. caudata* Emerton, *T. elongata* Walekenaer, *T. elyunquensis* Petrunkevitch, *T. exigua* Chickering, *T. farri* sp. nov., *T. guatemalensis* O. P.-Cambridge, *T. lewisi* sp. nov., *T. orizaba* (Banks), *T. pallescens* F. P.-Cambridge, *T. subextensa* Petrunkevitch, *T. tenuissima* O. P.-Cambridge, *T. visenda* Chickering. Only females are known for *T. farri* sp. nov., *T. elyunquensis* Petrunkevitch, and *T. subextensa* Petrunkevitch. Only males are known for *T. lewisi* sp. nov. and *T. visenda* Chickering. Both sexes are known for the remaining eight species. I had expected that *T. piscatoria* Simon would be found on the island but up to the present time this species had not appeared in the collections. I have had specimens from the British Museum (Natural History) selected from the original collection and on loan for study, however. For extensive bibliographies the reader is referred to Roewer (1942) and Bonnet (1959). Only those publications considered most pertinent are cited in this paper. Helpful figures of species treated in this paper have been published by several authors. The following publications are suggested as references: F. P.-Cambridge (1903); Petrunkevitch (1930); Seeley (1928); Chickering (1957a, 1957b). In the subject matter dealing with each species treated in this paper I have tried to record the most important external features concerned with identification. Variations among the structural characteristics have been noted with respect to nearly every

species and these should be taken into consideration whenever one is making an extensive study of the genus. This has been done altogether too infrequently in past studies and has often led to errors and misconceptions. It is hoped that the drawings of various parts which accompany the descriptive material on each species will be helpful to those in Jamaica who are attempting to gain a comprehensive view of the arthropod fauna of the island. Whenever possible these drawings have been made directly from Jamaican specimens and sometimes differ somewhat from previously published drawings. This is caused by the inadequacy of some of the previously published figures, natural variations within species, and the fact that such parts as the terminations of the male palpal conductor and embolus have quite different appearances when viewed from different angles. Holotypes will be deposited in the Museum of Comparative Zoology at Harvard College.

Acknowledgments are again due and gratefully rendered to individuals and organizations as specifically mentioned in several recent publications (1957a, 1959, 1960). In addition to these I will now add the names of Mr. C. Bernard Lewis, Director, Mr. R. P. Bengry, and Dr. T. H. Farr, all of whom are on the staff of the Science Museum of the Institute of Jamaica and all of them aided me greatly in my field work during my stay of three months in Jamaica in the fall of 1957.

Keys to the Species of TETRAGNATHA from Jamaica, W. I.

Males

1. Lateral eyes farther from one another than AME are from PME (*caudata, lewisi, orizaba, pallescens*) 2
- 1a. Lateral eyes closer to one another than AME are to PME (*antillana, elongata, exigua, guatemalensis, tenuissima, visenda*) 5
2. With abdomen conspicuously extended posterior to spinnerets *caudata*, p. 430
- 2a. With abdomen not conspicuously extended posterior to spinnerets (*lewisi, orizaba, pallescens*) 3
3. Promargin of the fang groove without the conspicuous "large tooth" *pallescens*, p. 444
- 3a. Promargin of the fang groove with the "large tooth" standing as either the second or third from the distal end (*lewisi, orizaba*) 4
4. The conductor of the palpal tarsus an elongated, gently curved structure without any special terminal modification. *lewisi*, p. 439
- 4a. Palpal conductor modified distally into a beak-like structure *orizaba*, p. 442

5. All legs devoid of spines (*exigua, tenuissima*) 6
- 5a. All legs with spines (*antillana, elongata, guatemalensis, visenda*) 7
6. Prolateral spur on basal segment of chelicera not bifurcated distally; a small species, not more than 3-4 mm. in length *exigua*, p. 435
- 6a. Prolateral spur on basal segment of chelicera definitely bifurcated distally; a much larger species, 8-9 mm. in length *tenuissima*, p. 447
7. Promargin of fang groove without the "large tooth" as usually regarded *antillana*, p. 428
- 7a. Promargin of fang groove with the "large tooth" occupying the third place from the distal end (*elongata, guatemalensis, visenda*) 8
8. Paracymbium terminating in a slender digital extension *guatemalensis*, p. 438
- 8a. Paracymbium without any slender, digital, terminal extension (*elongata, visenda*) 9
9. Palpal patella and tibia both short with tibia longer than patella in ratio of about 3 : 2 *visenda*, p. 448
- 9a. Palpal patella and tibia elongated with tibia nearly or fully twice as long as the patella *elongata*, p. 431

Females

1. Lateral eyes farther from one another than AME are from PME (*caudata, orizaba, pallescens*) 2
- 1a. Lateral eyes closer to one another than AME are to PME (*antillana, elongata, elyunquensis, exigua, farri, guatemalensis, subextensa, tenuissima*) 4
2. Abdomen conspicuously extended posterior to spinnerets *caudata*, p. 430
- 2a. Abdomen not conspicuously extended posterior to spinnerets (*orizaba, pallescens*) 3
3. Basal segment of chelicera about half as long as carapace; genital fold several times as wide as long; retromargin of fang groove with 5-6 teeth *orizaba*, p. 442
- 3a. Basal segment of chelicera about four-fifths as long as carapace; genital groove about twice as wide as long; the retromargin of fang groove with about ten teeth *pallescens*, p. 444
4. Abdomen short, compact, about half as broad as long; lateral eyes nearly contiguous *elyunquensis*, p. 433
- 4a. Abdomen relatively long and slender; lateral eyes not nearly contiguous (*antillana, elongata, exigua, farri, guatemalensis, subextensa, tenuissima*) 5
5. Spines completely lacking from legs (*exigua, tenuissima*) 6
- 5a. Legs at least fairly well supplied with spines (*antillana, elongata, farri, guatemalensis, subextensa*) 7
6. A small species, not more than 3-4 mm. in length; only about 5-6 teeth along each margin of fang groove *exigua*, p. 435

- 6a. A larger species, about 10-11 mm. long; about 8-9 teeth along each margin of fang groove *tenuissima*, p. 447
7. Retromargin of fang groove with a large distal tooth conspicuously extended apically (Fig. 5); genital fold considerably longer than wide at base *antillana*, p. 428
- 7a. Retromargin of fang groove without an enlarged and extended distal tooth; genital fold not longer than wide at base (*elongata*, *farri*, *guatemalensis*, *subextensa*) 8
8. Fang with a conspicuous retrolateral cusp at its base (Fig. 33) *farri*, p. 435
- 8a. Fang without any conspicuous retrolateral cusp at its base (small dorsal cusps may be present) (*elongata*, *guatemalensis*, *subextensa*) 9
9. Basal segment of chelicera with a more or less well developed dorsal cusp at distal end (Fig. 19) *elongata*, p. 431
- 9a. Basal segment of chelicera without any dorsal cusp at distal end (*guatemalensis*, *subextensa*) 10
10. With a more or less conspicuous dorsal abdominal gibbosity; basal segment of chelicera about one-third as long as carapace *subextensa*, p. 445
- 10a. Without any conspicuous dorsal abdominal gibbosity; basal segment of chelicera about half as long as carapace *guatemalensis*, p. 438

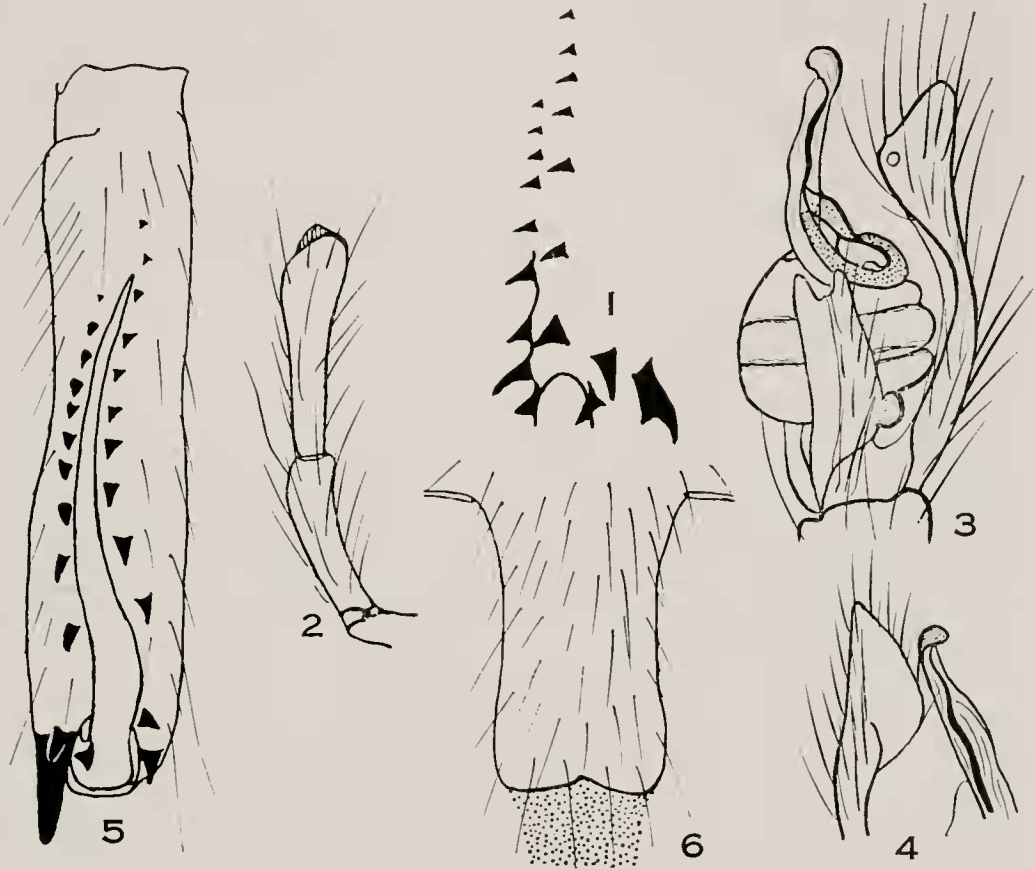
TETRAGNATHIA ANTILLANA Simon, 1897
(Figures 1-6)

- T. antillana*, F. P.-Cambridge, 1903.
T. eremita Chamberlin, 1924.
T. antillana Seeley, 1928.
T. antillana, Petrunkevitch, 1930.
T. apheles Chamberlin and Ivie, 1936 (females only).
T. festina Bryant, 1945 (male only).
T. haitiensis Bryant, 1945 (females only).
T. antillana Kraus, 1955.
T. antillana Chickering, 1957a, 1957b.

This species appears to be widely distributed through Mexico, Central America, much of South America to Argentina, and also much of the West Indian region. It is one of the largest species thus far reported from the Island of Jamaica.

Males. Length about 8-9 mm. without chelicerae; including chelicerae about 10.5 to 11 mm. or even larger. Legs with numerous spines of moderate length. Lateral eyes closer to one another than AME are to PME. Chelicerae: porrect and quite divergent in distal halves; basal segment nearly as long as carapace; there is no "large tooth" on the promargin of the fang groove but the spur and two contiguous teeth form a conspicuous group of

three; the spur itself is usually robust and definitely bifurcate distally; the complete dentition is shown in Figure 1. Palp: the patella is about two-thirds as long as the tibia and both are considerably elongated (Fig. 2); the paracymbium is distally bifid; the fang is moderately sinuous and has irregularities along its inner surface; the conductor and embolus terminate as shown in Figures 3 and 4.



External Anatomy of *Tetragnatha*
Figures 1-6, *T. antillana*

- FIG. 1. Cheliceral teeth of male.
 FIG. 2. Palpal tibia and patella.
 FIGS. 3-4. Palpal tarsus; two different views.
 FIG. 5. Left chelicera of female; ventral view.
 FIG. 6. Genital fold of female.

Females. Length about 9-10 mm. without chelicerae; with chelicerae 11-12 mm. Spines on legs and eyes essentially as in males. Chelicerae: moderately porrect and moderately divergent; basal segment a little more than two-thirds as long as the

carapace; there is a large and quite distinctive distal retromarginal tooth and other teeth along the fang groove as indicated in Figure 5; the fang is moderately sinuous and there is usually a small dorso-retrolateral cusp near its base. The form of the genital groove is shown in Figure 6.

Collection records. Both sexes have been collected at numerous localities during the past few years. It was found to be abundant at St. Catherine, Guanaboa Vale, November and December, 1957, and at Mavis Bank, March, 1953 (R. P. Bengry); also collected at St. Catherine, Guanaboa Vale, February, 1958 (R. P. Bengry), and November, 1958 (T. H. Farr). Also taken several times in St. Andrew and St. Thomas parishes.

TETRAGNATHA CAUDATA Emerton, 1884

(Figures 7-13)

T. lacerta Petrunkevitch, 1911.

T. caudata Seeley, 1928.

T. lacerta Roewer, 1942.

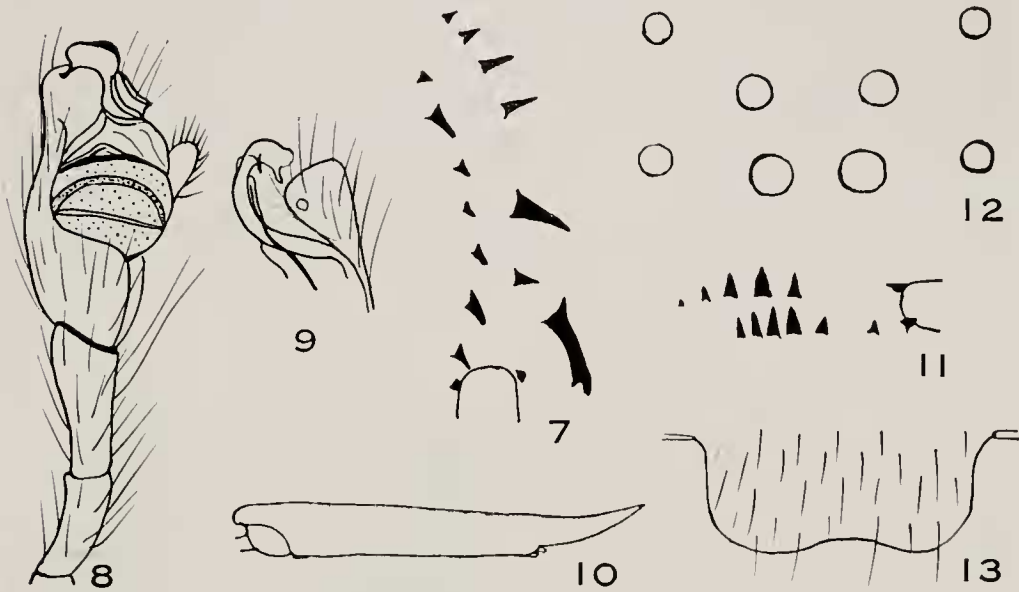
T. caudata Chickering, 1957a, 1957b.

Males. Average length with chelicerae about 8 mm.; slender with abdomen conspicuously extended posterior to spinnerets thus producing what has been called a "tail"; legs are long, slender, with few weak spines. Eyes: laterals plainly farther from one another than AME are from PME. Palp: patella and tibia both relatively short with little difference in length; paracymbium bluntly rounded at distal end; the conductor is curiously dilated and minutely spined distally; variations have been noted in respect to this terminal dilation in specimens from different localities and it is suggested these differences may be due in part to distortion in the preservative (Figs. 8-9). Chelicerae: the fang is regularly curved without being sinuate; the basal segment is about two-thirds as long as the carapace; the promarginal "large tooth" is conspicuous and there are about seven other teeth on this margin; the retromargin of the fang groove has a series of about 8-9 teeth (Fig. 7).

Females. Average length with chelicerae about 9-10 mm. Abdomen even more conspicuously extended posterior to spinnerets than in males; notched at its base; the degree of extension posterior to spinnerets differs in different specimens in preservation because of the ability of each individual to extend or retract this part of its body in the living state. Chelicerae: basal segment about half as long as carapace; promargin of fang groove with

about 6-7 teeth, retromargin with about the same number; the base of the fang usually has a dorsal cusp. The genital groove and area are about half as long as wide at base (Fig. 13).

Collection records. The species appears to be rare in Jamaica as in many other regions where it has been reported. I have but one record from this island: Papine, April, 1937, five miles north of the city of Kingston. The species did not appear in my collections of 1957.



External Anatomy of *Tetragnatha*
Figures 7-13, *T. caudata*

FIG. 7. Left cheliceral dentition of male.

FIG. 8. Palpal patella, tibia, and tarsus of male; one view of distal end of conductor.

FIG. 9. Another view of tip of cymbium and distal end of conductor.

FIG. 10. Left lateral view of abdomen of female.

FIG. 11. Left cheliceral dentition of female.

FIG. 12. Eye group of female from in front.

FIG. 13. Genital fold of female.

TETRAGNATHA ELONGATA Walekenaer, 1805
(Figures 14-20)

T. grallator Keyserling, 1865.

T. elongata Seeley, 1928.

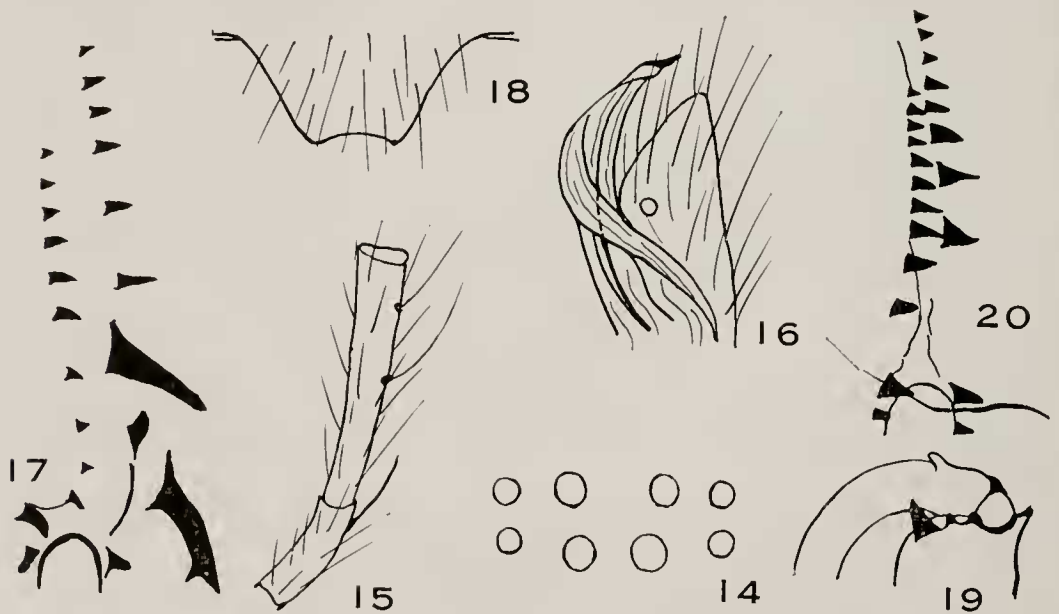
T. elongata Bryant, 1940.

T. elongata Bryant, 1945.

T. elongata Chickering, 1959.

This species is known to be widely distributed throughout the United States, from Mexico to the Arctic regions, and has been reported from Cuba, Hispaniola, and Colombia. It has not yet appeared in my Panamanian collections and I am doubtful about the accuracy of the South American identifications. I can now definitely report it from Jamaica, W. I.

Males. Average length including chelicerae about 9-10 mm. Abdomen not extended posterior to spinnerets and not gibbous at base. Lateral eyes closer to one another than AME are to PME (Fig. 14). Spines on legs fairly long and moderately robust. Palp: tibia nearly twice as long as patella and both are considerably elongated (Fig. 15); paracymbium bluntly rounded distally; conductor curved and sharply pointed at tip (Fig. 16). Chelicerae: basal segment usually as long as the carapace; the spur is plainly bifurcate distally; the "large tooth" is conspicuous on the promargin of the fang groove together with seven



External Anatomy of *Tetragnatha*
Figures 14-20, *T. elongata*

FIG. 14. Eye group of male, from in front.

FIG. 15. Palpal patella and tibia of male.

FIG. 16. Tips of cymbium, embolus, and conductor.

FIG. 17. Left cheliceral teeth of male.

FIG. 18. Genital groove of female.

FIG. 19. Distal end of basal segment of chelicera, base of fang and associated structures.

FIG. 20. Left cheliceral teeth of female.

or eight smaller teeth; the retromargin has a series of from 10 to 13 teeth most of which are relatively small (Fig. 17); the fang is somewhat sinuate.

Females. Average length with chelicerae about 13 mm. Abdomen: not continued posterior to spinnerets; considerably swollen at base which is only slightly concave; genital fold and area much wider at base than long (Fig. 18). Eyes essentially as in male. Spines essentially as in male also. Chelicerae: basal segment nearly as long as carapace and typically with a small dorsal distal tooth (Fig. 19); the fang is moderately sinuous and has a basal dorsal cusp; the promargin of the fang groove has about 8-11 teeth with a considerable space between the second and third; the retromargin has about 12-13 teeth with a shorter space between the second and third.

Collection records. St. Thomas, Roselle Falls, October 29th, 1957; St. Catherine, near Bushey Park, December 2, 1957; St. Andrew, Hermitage Reservoir, November 26th, 1957; St. Andrew, Ferry, November 27, 1958 (T. H. Farr).

TETRAGNATHA ELYUNQUENSIS Petrunkevitch, 1930

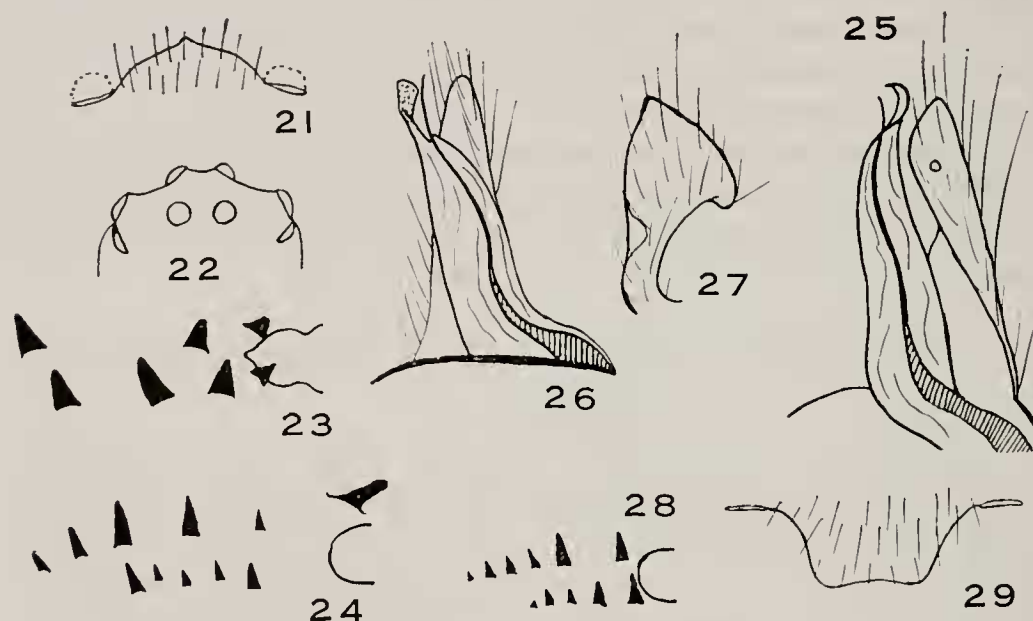
(Figures 21-23)

The females of this species were described from Porto Rico where they were found at the summit of El Yunque in October, 1925. The males are still unknown. It was pointed out by Dr. Petrunkevitch that the generic relationships of this species are not clear. He suggested that it might be more closely related to *Pachygnatha* and even had some features which suggested *Meta*. It will be interesting to see the male when it is found.

Females. Total length with chelicerae about 5-6 mm. Abdomen: the shape varies considerably and in some of the older specimens becomes very gibbous in the middle of the dorsal region; usually more than half as broad as long; not notched or concave at base; in general, relatively short and compact; not continued posterior to spinnerets; genital groove and area very gently extended so that the groove itself would be said to be gently procurved and not angular (Fig. 21). Eyes: with LE very close together and medians well separated; central ocular quadrangle only slightly wider behind than in front (Fig. 22). Spines on legs rather short and fairly robust. Palpal claws without discernible teeth. Chelicerae: short, robust; slightly more than half as long as carapace; fang evenly curved; fang groove with three promarginal teeth, the second very small, close to the first and far

separated from the third; on the retromargin there is a relatively large, blunt, somewhat irregular tooth at the base of the fang (not represented in Petrunkevitch's original drawing), two more close together, a short space and then two more (some variations have been noted among the specimens available for study) (Fig. 23).

Collection records. The species has been taken at the following localities: St. Andrew, Hermitage Reservoir, October 30, November 5, 1957; Portland, Hardwar Gap, November 20, 1957 and December 8, 1958 (T. H. Farr).



External Anatomy of *Tetragnatha*

Figures 21-23, *T. elyunquensis*

Figures 24-29, *T. exigua*

- FIG. 21. Genital groove of female.
 FIG. 22. Eye group of female, from above.
 FIG. 23. Left cheliceral teeth of female.
 FIG. 24. Left cheliceral teeth of male.
 FIG. 25. Distal ends of cymbium, conductor, and embolus.
 FIG. 26. *Idem*, from a different view.
 FIG. 27. Paracymbium of male.
 FIG. 28. Left cheliceral teeth of female.
 FIG. 29. Genital groove of female.

TETRAGNATHA EXIGUA Chickering, 1957
(Figures 24-29)

Males. Total length with chelicerae a little less than 3 mm. Abdomen slender; not extended posterior to spinnerets. Eyes with laterals somewhat closer to one another than AME are to PME. Chelicerae: moderately porrect; quite divergent in distal two-thirds; prolateral spur simple, not bifurcate distally; fang slender, slightly sinuate, with a blunt tubercle on its inner margin about one-fifth of its length from the base; basal segment about half as long as the carapace; the "large tooth" is absent from the promargin of the fang groove but there are five teeth on this margin and about five on the retromargin (Fig. 24); variations in the dentition have been noted. Spines are completely lacking from the legs just as in *T. tenuissima*. Palp: both tibia and patella are short with the tibia somewhat the longer; the paracymbium (Fig. 27) is unusually broad; the conductor appears to terminate in a sharp, fine, claw-like point (Figs. 25-26).

Females. Total length with chelicerae about 3-4 mm. Abdomen: slender and not extended posterior to spinnerets; the genital groove and area are about half as long as wide at base (Fig. 29). Eyes: essentially as in male; an erroneous statement regarding position of the eyes occurs in the original description. All spines lacking from the legs as in male. Chelicerae: moderately well developed; fairly robust; nearly vertical and parallel; basal segment about one-third as long as carapace; fang slender and evenly curved; promargin of fang groove with about four moderately well developed teeth and retromargin with about four or five smaller teeth (frequent variations have been noted).

Collection records. The original specimens were from Hanover, Askenish, Trail to Dolphin Head, June 24, 1954. Since that time the species has been taken at Portland, Hardwar Gap, October 2, and November 20, 1957.

TETRAGNATHA FARRI sp. nov.
(Figures 30-33)

A few years ago while studying this genus as it was understood in Jamaica, W. I., at that time (1957), I stated that I considered two females from St. Croix, Virgin Islands, erroneously filed as *T. antillana* Simon to belong to *T. confraterna* Banks. In the light of my continued study of the genus and the species

here described together with a re-examination of the two specimens from St. Croix I am now of the opinion that they all belong to a new species which I am naming in honor of Dr. T. H. Farr with whom I collected extensively during my visit to Jamaica in the fall and early winter of 1957. For these reasons I am compelled to conclude that *T. confraterna* Banks has not yet been positively identified from the West Indies. It is my opinion, however, that *T. farri* sp. nov. is closely related to *T. confraterna* Banks but the characteristics of the genital groove, cheliceral teeth, and perhaps other features serve to separate them quite definitely.

Female holotype. Total length with chelicerae 10.205 mm., without the chelicerae 8.45 mm. Carapace 2.795 mm. long, 1.69 mm. wide opposite second coxae where it is widest; with the usual form of the genus; median fovea broad and subdivided into two shallow depressions.

Eyes. Eight in two rows as usual; ocular tubercles moderately developed; viewed from above, both rows moderately recurved; viewed from in front, anterior row almost straight, posterior row slightly procurved, all measured by centers. Central ocular quadrangle wider behind than in front in ratio of 17 : 14, only slightly wider behind than long. Ratio of eyes AME : ALE : PME : PLE = 10 : 6 : 8 : 8. AME separated from one another by about 1.1 times their diameter, from ALE by 1.8 times their diameter. PME separated from one another by slightly more than twice their diameter, from PLE by 2.5 times their diameter. Laterals separated from one another by about 11/8 of their diameter. AME separated from PME by about 1.4 times the diameter of AME and, therefore, slightly farther from one another than ALE are from PLE. Height of clypeus equal to nearly 1.5 times the diameter of AME. (In a paratype the lateral eyes appear to be slightly farther from one another than AME are from PME.)

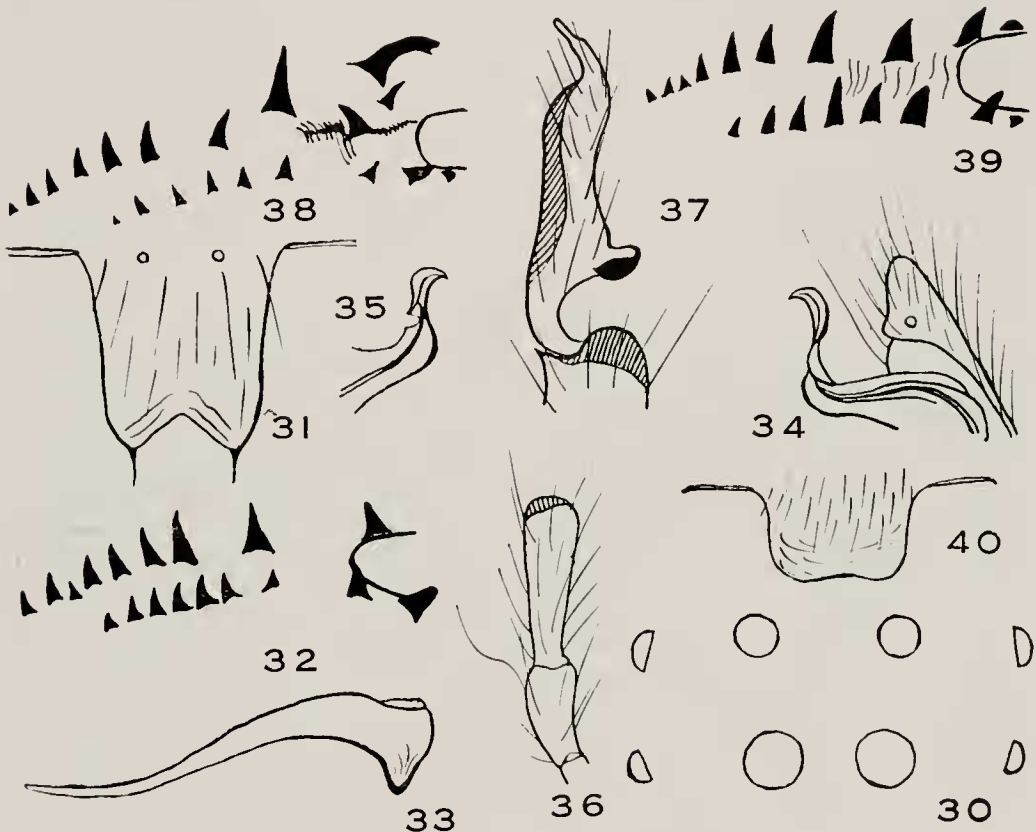
Chelicerae. Moderately porrect and quite divergent; basal segment 2.00 mm. long and, therefore, about three-fourths as long as carapace. Fang quite sinuous, with a conspicuous retrolateral cusp near its base (Fig. 33) and an elevation near the middle of its inner surface. Promargin of fang groove with nine teeth (some irregularity noted between right and left sides); retromargin with nine teeth (Fig. 32).

Maxillae. Quite typical of the genus; slightly divergent and somewhat broadened distally; somewhat more than three times

as long as wide in middle; a little more than twice as long as lip.

Lip. Slightly wider at base than long; sternal suture only very slightly procurved; with pronounced sternal tubercles at ends of suture.

Sternum. Generally scutiform; moderately convex; moderately scalloped opposite each coxa and produced between all coxae; continued as a narrow sclerite between fourth coxae which are separated by about one-third of their width.



External Anatomy of *Tetragnatha*

Figures 30-33, *T. farri*

Figures 34-40, *T. guatemalensis*

- FIG. 30. Eye group of female.
 FIG. 31. Genital groove of female.
 FIG. 32. Cheliceral teeth of female.
 FIG. 33. Left fang of female showing basal cusp.
 FIG. 34. Distal ends of cymbium, conductor, and embolus.
 FIG. 35. Another view of distal ends of conductor and embolus.
 FIG. 36. Palpal patella and tibia of male.
 FIG. 37. Paracymbium of male.
 FIG. 38. Left cheliceral teeth of male.
 FIG. 39. Left cheliceral teeth of female.
 FIG. 40. Genital groove of female.

Legs. 1243. Width of first patella at "knee" .330 mm., tibial index of first leg 6. Width of fourth patella at "knee" .286 mm., tibial index of fourth leg 8.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
(All measurements in millimeters)						
1.	4.940	1.060	4.550	5.005	1.430	16.985
2.	3.835	.890	3.250	3.250	.910	12.135
3.	1.950	.520	1.235	1.365	.650	5.720
4.	3.770	.650	2.860	2.925	.845	11.050

All legs with spines and hair. Spines of moderate size. All femora with triebobothria. Palpal claw with a series of fine teeth.

Abdomen. Considerably swollen in anterior half; unnotched at base; 6.5 mm. long including spinnerets; not extended posterior to spinnerets; genital fold deeply notched at posterior border, about as wide at base as long (Fig. 31).

Color in alcohol. Color pattern well marked. Legs: in general yellowish but with many grayish streaks and spots; several segments terminate in reddish brown rings. Carapace: with a broad central gray stripe, widened in cephalic region; with a gray marginal stripe on each side. Chelicerae with varying shades of gray; fang deep reddish brown. Sternum and lip brownish gray. Maxillae nearly white in median half and gray in lateral half. Abdomen: dorsum and lateral sides with many nearly black spots and streaks with silvery spots and streaks; venter with a median brownish gray stripe on each side of which is a light stripe composed of a large number of silvery flecks. Color pattern difficult to describe adequately and probably quite variable in the species.

Type locality. Female holotype from St. Catherine, three miles east of May Pen, November 22, 1957. There is one paratype from St. Andrew, Hermitage Reservoir, November 26, 1957.

TETRAGNATHA GUATEMALENSIS O. P.-Cambridge, 1889.

(Figures 34-40)

T. guatemalensis F. P.-Cambridge, 1903.

T. seneca Seeley, 1928.

T. banksi Levi and Field, 1954.

T. guatemalensis Chickering, 1957a, 1957b.

Males. Total length with chelicerae about 7-8 mm. (somewhat smaller than those from Panama). Abdomen not extended posterior to spinnerets. Eyes: lateral eyes closer to one another

than AME are to PME. Spines are present on the legs in moderate numbers and size. Palp: tibia longer than patella in ratio of about 3 : 2; both of moderate length; paracymbium terminates in a slender digital process, quite distinctive; conductor and embolus terminate in distinctive manner (Figs. 34-37). Chelicerae: the fang has a small basal dorsal cusp and has a low elevation on its inner margin near the middle; the spur is indistinctly bifid; the promargin of the fang groove has the "large tooth" moderately well developed together with eight other teeth placed in positions typical of the Panamanian members of the species; the retromargin has nine teeth also placed essentially as they are on those from Panama; the northern members of the species seem to alter the arrangement and relative sizes of the teeth to some extent; the basal segment of the chelicera is very divergent in its distal two-thirds and is about four-fifths as long as the carapace.

Females. Total length with chelicerae about 9-10 mm. in fully matured individuals. Abdomen: not continued posterior to spinnerets; considerably swollen in anterior half; genital groove (Fig. 40) a little less than half as long as wide at base. Eyes essentially as in male. Spines on legs numerous and rather short. Palpal claw finely serrated. Chelicerae: basal segment only a little more than half as long as carapace; promargin of fang groove with about ten teeth, the last two or three of which are very small (Fig. 39); the retromargin has about eight teeth.

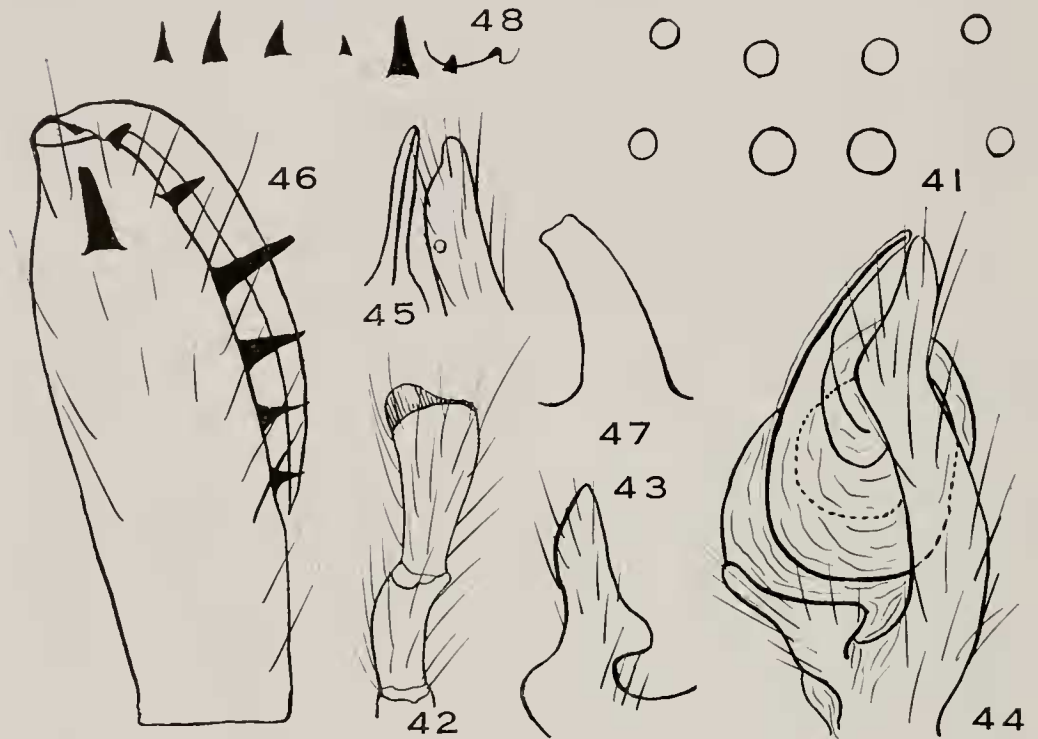
Collection records. St. Catherine, Old Harbour, October 9 and December 7, 1957; St. Catherine, Rio Cobre Gorge, November 7, 1957; St. Catherine, Guanaboa Vale, November, 1958; St. Catherine, near Bushey Park, December 2, 1957; St. Andrew, Richards Reservoir, December 3, 1957.

TETRAGNATHA LEWISI sp. nov.

(Figures 41-48)

The male described below as the holotype of a new species is considerably damaged with its abdomen detached and legs mutilated. For a time it was thought best not to describe it until better specimens are available. However, because the species represented by this specimen has certain unusual features it was finally decided to describe it even though it is damaged to some extent. This decision was based in part upon advice of colleagues in the Museum of Comparative Zoology at Harvard College.

Holotype male. Total length including chelicerae about 7.8 mm. Carapace 2.145 mm. long, 1.32 mm. wide opposite second coxae where it is widest; with the usual form of the genus; median fovea divided into two shallow depressions.



External Anatomy of *Tetragnatha*

Figures 41-48, *T. lewisi*

- FIG. 41. Eye group of male from in front.
 FIG. 42. Palpal patella and tibia of male.
 FIG. 43. Paracymbium of male.
 FIG. 44. Palpal tarsus of male.
 FIG. 45. Another view of distal end of cymbium, conductor, and embolus of male.
 FIG. 46. Left chelicera of male showing spur and teeth along the pro-margin of fang groove.
 FIG. 47. Spur from chelicera, much enlarged, showing bevelled distal end.
 FIG. 48. Teeth along the retromargin of the fang groove.

Eyes. Eight in two rows as usual; ocular tubercles bearing ALE are most pronounced. Viewed from above, both rows recurved; viewed from in front, posterior row somewhat recurved, anterior row almost straight, all measured by centers. Central ocular quadrangle wider behind than in front in ratio of

about 7 : 6, about as long as wide behind. Ratio of eyes AME : ALE : PME : PLE = 9 : 5 : 6 : 5. AME separated from one another by about eleven-ninths of their diameter, from ALE by twice their diameter. PME separated from one another by about 2.5 times their diameter, from PLE by a little more than twice their diameter. Laterals separated from one another by nearly 3.5 times their diameter. AME separated from PME by about twice the diameter of PME and, therefore, closer to one another than ALE are to PLE (Fig. 41). Height of clypeus equal to about 1.5 times the diameter of AME.

Chelicerae. Only slightly porrect; slightly divergent in distal half; basal segment about 1.3 mm. long and, therefore, about two-thirds as long as the carapace; fang only slightly sinuous; the prolateral spur is not distally bifid but it is slightly bevelled there. The promargin of the fang groove apparently has six teeth of which the third from the base of the fang is the so-called "large tooth" but it is not strongly developed; the retro-margin also has six teeth of which the second from the base of the fang is the largest (Figs. 46-48). Note: figures of teeth reconstructed by use of both right and left chelicerae because of injury to certain teeth.

Maxillae. Nearly parallel; slightly widened and divergent at distal ends; three times as long as wide in middle; longer than lip in ratio of about 3 : 1.

Lip. Broader at base than long in ratio of about 17 : 12; sternal suture gently procurved; lateral sternal tubercles well developed.

Sternum. Elongate scutiform; longer than wide between second coxae in ratio of about 3 : 2; extended between coxae as narrow sclerites; fourth coxae separated by about two-thirds of their width.

Legs. 1243 (estimated from incomplete data because of mutilation). Width of first patella at "knee" .242 mm., tibial index of first leg 4. Width of fourth patella at "knee" .190 mm., tibial index of fourth leg 5.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
	(All measurements in millimeters)					
1.	5.330	.845	5.330 ?	?	?	?
2.	4.130 ?	.650	3.315	3.575	?	?
3.	1.885	.455	1.322	1.365	.585	5.612
4.	3.900	.550	3.120	3.200	.780	11.550
Palp	1.170	.264	.308	—	1.012	2.754

Spines on legs fairly numerous and of moderate size.

Palp. Both patella and tibia short with latter only slightly longer than the former; the paracymbium (Fig. 43) has an unusual form and is considerably twisted in its course; the bulb is considerably inflated; the conductor and embolus are both very simple and follow a different course than is the case in most species (Figs. 44-45).

Abdomen. Slender; essentially cylindrical; slightly but probably not significantly extended posterior to spinnerets; unnotched at base; nearly five times as long as broad near anterior end.

Color in alcohol. Legs light yellowish with some variations. Chelicerae the same with grayish spots on prolateral surfaces. Carapace yellowish with a grayish stripe extending through the middle from PLE to posterior border. Sternum yellowish with broad, irregular, grayish margins. Abdomen: yellowish with many silvery and light golden flecks on dorsal and lateral sides; venter with a broad, median, brownish stripe and a narrow, brownish stripe in each ventrolateral position.

Type locality. Holotype male is from St. Ann, one mile east of Moneague, on Gayle Road, November 7, 1957. No paratypes and no females have yet appeared in the collections.

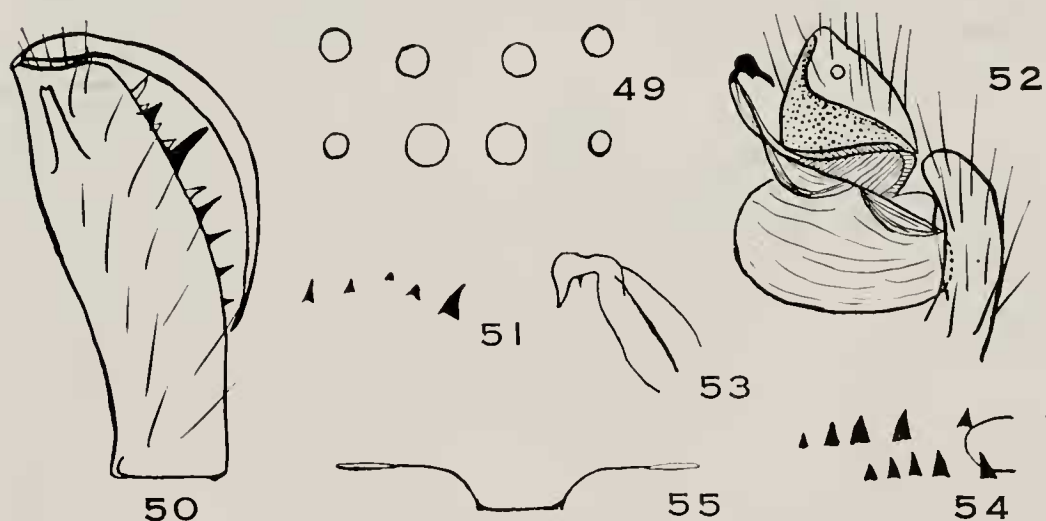
TETRAGNATHA ORIZABA (Banks), 1898
(Figures 49-55)

Eugnatha orizaba Banks, 1898.

Males. About 5-6 mm. long with chelicerae. Lateral eyes farther from one another than AME are from PME. Chelicerae: moderately well developed; moderately porrect; quite divergent in distal halves; spur moderately bifurcate distally; fang slender, slightly sinuous; promargin of fang groove with six teeth, retro-marginal with five and with the middle one hardly more than a small tubercle; the second promarginal tooth may be regarded as the "large tooth" so commonly figured and emphasized in descriptions: basal segment a little more than one-half as long as the carapace. Leg spines are fairly numerous and of moderate sizes. Palp: both patella and tibia short with tibia longer than patella in ratio of about 4 : 3; the paracymbium is long and slender; the conductor and embolus are shaped as shown in Figures 52-53. Abdomen: slender; only slightly concave at base; not noticeably continued posterior to spinnerets.

Females. Total length with chelicerae about 5-6 mm. Eyes essentially as in males. Chelicerae: moderately robust and fairly well developed; nearly perpendicular; somewhat divergent; basal segment a little less than half as long as carapace; fang groove with five teeth along the promargin, the last of which is very small, and also with five along the retromargin. The leg spines are few and slender. Abdomen: essentially as in male but somewhat more robust; slightly notched at base; genital groove as shown in Figure 55. Color: the carapace has a narrow light-colored border and red streaks nearly throughout its surface; the abdomen has many spangles with a pinkish tint along the dorsolateral and lateral surfaces; there is much variation in the degree of red which appears in the coloration of different individuals.

Collection records. St. Andrew, Liguanea, October 5, 1957; St. Andrew, Long Mt., October 26, 1957; St. Andrew, Red Hills Road, October 28, 1957; St. Andrew, Richards Reservoir, November 27, 1957; St. Catherine, three miles east of Old Harbour, October 21, 1957; St. Catherine, one mile west of Spanishtown, October 21, 1957; St. James, near Reading, June 23, 1954.



External Anatomy of *Tetragnatha*
Figures 49-55, *T. orizaba*

- FIG. 49. Eye group of male.
 FIG. 50. Left chelicera of male from in front.
 FIG. 51. *Idem*; showing teeth along the retromargin of fang groove.
 FIG. 52. Distal end of palpal tarsus of male.
 FIG. 53. Distal end of palpal conductor and embolus; a different view and somewhat more enlarged.
 FIG. 54. Left cheliceral teeth in female.
 FIG. 55. Genital groove of female.

TETRAGNATHA PALLESCENS F. P.-Cambridge, 1903
(Figures 56-61)

T. pallida Banks, 1892.

Eugnatha pallida Banks, 1898.

T. pallescens F. P.-Cambridge, 1903.

T. bidens F. P.-Cambridge, 1903.

T. pallescens Seeley, 1928.

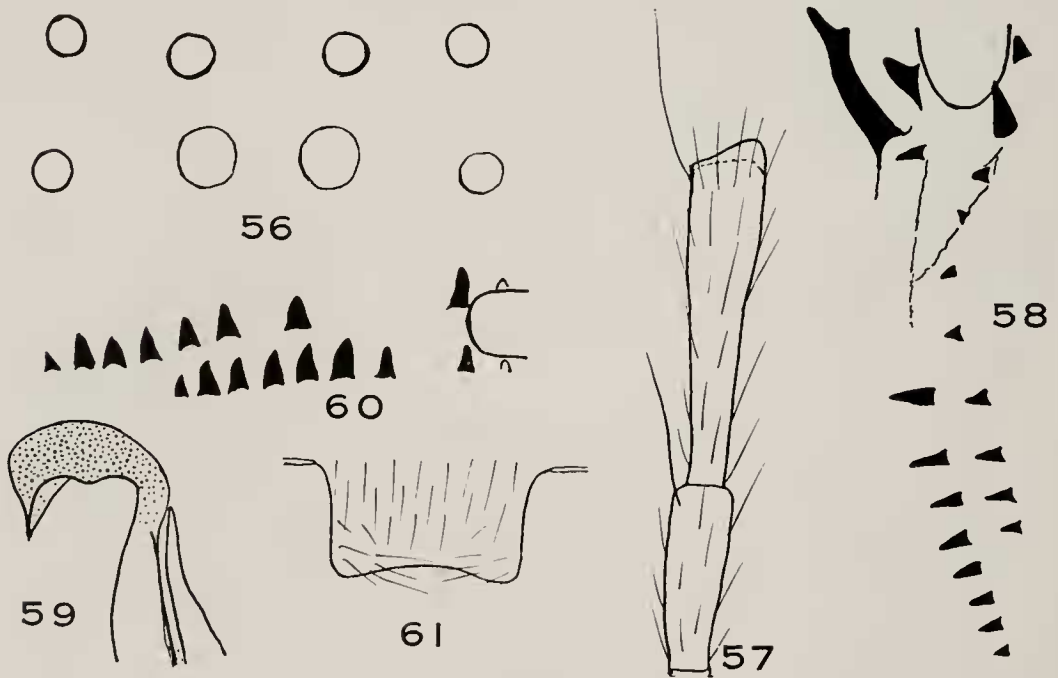
T. pallescens Petrunkevitch, 1930.

T. pallescens Bryant, 1940.

T. pallescens Bryant, 1945.

T. pallescens Chickering, 1957a, 1957b.

Males. Total length including chelicerae about 10-11 mm. Abdomen: not continued posterior to spinnerets; base of abdomen notched. Eyes: lateral eyes farther from one another than AME are from PME (Fig. 56). Spines on legs are fairly numerous and fairly conspicuous. Palp: both tibia and patella are



External Anatomy of *Tetragnatha*
Figures 56-61, *T. pallescens*

FIG. 56. Eye group of male.

FIG. 57. Palpal patella and tibia of male.

FIG. 58. Left cheliceral teeth of male.

FIG. 59. Distal end of left palpal conductor of male.

FIG. 60. Left cheliceral teeth of female.

FIG. 61. Genital groove of female.

somewhat elongated with the patella about two-thirds as long as the tibia (Fig. 57); paracymbium rather long and slender; the conductor terminates in a characteristic manner (Fig. 59). Chelicerae: the fang is only slightly sinuous; basal segment as long as the carapace; sometimes slightly longer; promarginal spur is bifurcate but the lower half of the fork is hardly more than a tubercle; the "large tooth" is absent from the promargin of the fang groove but there are about ten small teeth with a long toothless space between the second and third teeth; the retromargin of the fang groove has about ten teeth (Fig. 58).

Females. Total length with chelicerae about 10-12 mm. Abdomen not extended posterior to spinnerets; usually notched at its base; the genital groove and area nearly two-thirds as long as wide at base between openings of the book-lungs. Eyes and spines on legs essentially as in males. Palpal claw finely denticulate. Chelicerae: basal segment nearly four-fifths as long as carapace; fang moderately sinuous; promargin of fang groove with about nine teeth, the first of which is hardly more than a tubercle and with a long toothless space between the second and third; the retromargin of the fang groove has about ten teeth, the first of which is also very small; a considerable degree of variation in the dentition has been noted and in the specimen used for the figures only nine teeth were seen on each margin of the fang groove.

Collection records. This species is the most numerous in my collection of all the recorded species from Jamaica, W. I. It has been collected in many localities in the following parishes: St. Ann, St. Catherine, Kingston, St. Thomas.

TETRAGNATHA SUBEXTENSA Petrunkevitch, 1930

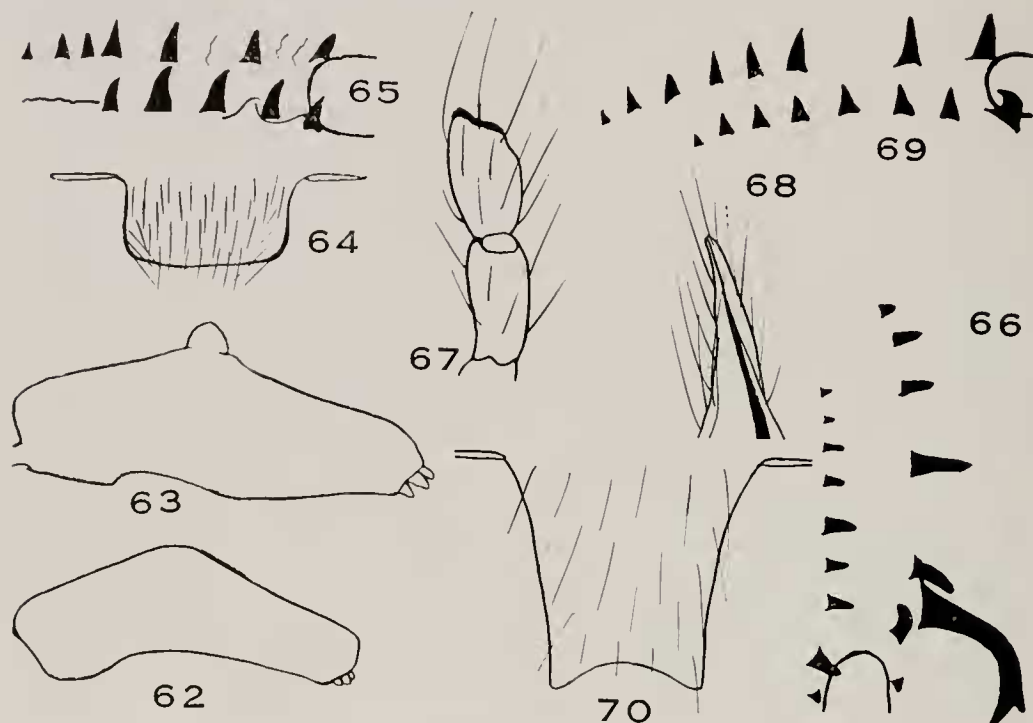
(Figures 62-65)

T. subextensa Roewer, 1942.

T. subextensa Bonnet, 1957.

This species was described from Porto Rico and, so far as I know, has not been reported since that time; only females are known. I apparently have numerous specimens of this species from Jamaica from which the following facts are taken: total length with chelicerae about 7-9 mm. Abdomen with a pronounced dorsal hump in the middle but this gibbosity appears to be highly variable among the specimens in my collection; in some, perhaps the typical forms, it appears as shown in Figure 62; on the other hand, it sometimes appears as shown in Figure

63 where the hump is like a tubercle more or less divided along the middorsal line; not prolonged posterior to the spinnerets; genital fold about one-half as long as wide between the openings into the book-lungs (Fig. 64). Eyes: laterals closer to one



External Anatomy of *Tetragnatha*

Figures 62-65, *T. subextensa*

Figures 66-70, *T. tenuissima*

FIGS. 62-63. Lateral views of abdomen of females to show differences in the gibbosity in different specimens.

FIG. 64. Genital groove of female.

FIG. 65. Left cheliceral teeth of female.

FIG. 66. Left cheliceral teeth of male.

FIG. 67. Palpal patella and tibia of male.

FIG. 68. Tip of cymbium and embolus in male.

FIG. 69. Left cheliceral teeth of female.

FIG. 70. Genital groove of female.

another than AME are to PME. Chelicerae: moderately porrect; slightly divergent; robust; somewhat convex in front; basal segment about one-half as long as carapace; promargin of fang groove usually with seven teeth and retromargin with six (as usual, variations in the dentition have been noted among specimens available for study); the fang is gently and regularly curved

and has a small dorsal cusp at its base. Numerous spines of moderate length and size occur on the legs. Color: quite variable as usual in the genus; all specimens seem to have an irregular, yellowish white (sometimes intermixed with narrow reddish streaks) band all around the margin of the thoracic part of the carapace; the "three pairs of small, black dorsal spots on abdomen" mentioned by the author of the species often appear to be obscure or lacking altogether.

Collection records. Appeared to be common in Kingston Parish, Palisadoes Area, October and November, 1957; St. Catherine, Port Henderson, October, 1957 and November, 1958; St. Andrew, Mona Road, October, 1957; Kingston, in a garden, June, 1954; St. Andrew, Richards Reservoir, November, 1957. One specimen from the Blue Mountains, S. W. side of Main Range, is tentatively assigned to this species but it is larger than other specimens and has a somewhat different tooth formula than do those assigned to the species with certainty.

TETRAGNATHA TENUISSIMA O. P.-Cambridge, 1889

(Figures 66-70)

T. tenuissima F. P.-Cambridge, 1903.

T. tenuissima Petrunkevitch, 1930.

T. tenuissima Bryant, 1940.

T. tenuissima Bryant, 1945.

T. tenuissima Chickering, 1957a, 1957b.

Males. Total length with chelicerae about 8-9 mm.; very slender; abdomen not extended posterior to spinnerets. Spines are completely lacking from the legs. Lateral eyes closer to one another than AME are to PME. Legs long and slender. Palp: tibia and patella both short with tibia slightly shorter than the patella; paracymbium with chitinous nodule much more distal in position than usual; conductor terminates in a nearly straight filament (Figs. 67-68). Chelicerae: very porrect and divergent; basal segment nearly as long as carapace; fang somewhat sinuate; the prolateral spur is plainly bifurcate with the lower fork considerably longer than the upper; the "large tooth" on the promargin of the fang groove is conspicuous together with three other teeth grouped near the spur and three more posterior to the "large tooth"; the retromargin of the fang groove has about 9-10 teeth, the second and third of which are the largest (Fig. 66).

Females. Total length with chelicerae about 10-11 mm. Also slender but with abdomen somewhat swollen near base and not continued posterior to spinnerets. Eyes essentially as in male. Spines also completely lacking from legs. Genital groove and area considerably elongated (Fig. 70); fully as long as wide at base, perhaps slightly longer. Chelicerae: fang quite sinuous; the expected dorsal basal cusp seems to be lacking in all Jamaican specimens as it was in the Porto Rican specimens studied by Petrunkevitch (1930); very porrect; quite divergent; fang with a deep depression in the inner margin near the middle; basal segment about three-fourths as long as carapace; promargin of fang groove with about seven teeth and a long toothless space between second and third, retromargin with about ten teeth.

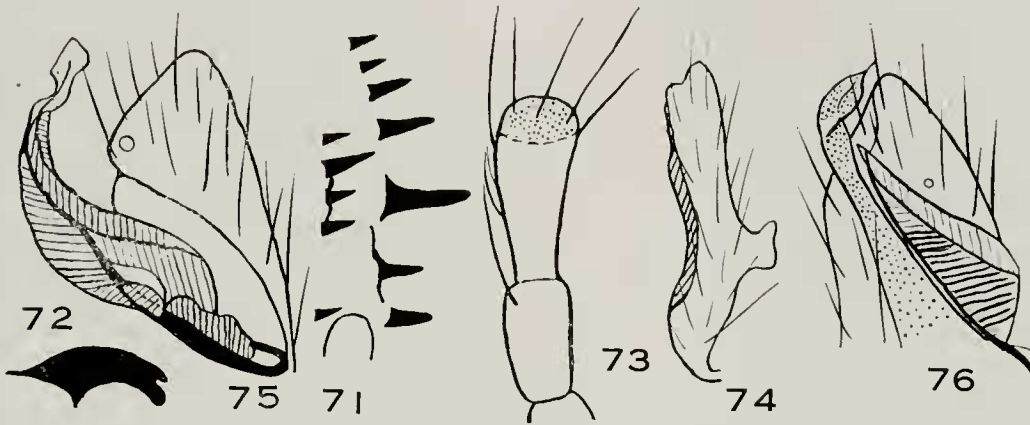
Collection records. St. Elizabeth, Maggoty, May 21, 1953 (G. R. Proctor); St. Andrew, Hermitage Reservoir, May 31, 1954 (R. P. Bengry), October 30 and November 5, 1957; St. Andrew, Mt. James, Plain River, October 24, 1957; St. Thomas, 6-7 miles northeast of Bath, December 10, 1957.

TETRAGNATHIA VISENDA Chickering, 1957

(Figures 71-76)

Males. Total length of holotype was 8.58 mm. including chelicerae; specimens now in my collection vary in length from 5.25 mm. to that of the holotype; in general quite slender. Eyes: laterals closer to one another than AME are to PME but the degree of separation varies somewhat in different specimens. Chelicerae: somewhat porrect and divergent; basal segment slightly more than half as long as carapace; fang moderately robust, evenly curved, and with a small basal cusp on the dorsal side; the promargin of the fang groove with the "large tooth" well developed together with from six to eight others; the retromargin has from about five to eight in different specimens; the prolateral spur is well developed, definitely bifurcate with the larger fork directed inwardly (Figs. 71-72). The holotype has nine promarginal teeth along the fang groove and eight along the retromargin but a considerable degree of variation has been noted in respect to these structures among the specimens now available. All legs bear spines of moderate length and size. Palp: tibia and patella both short with the former longer than the latter in ratio of about 3 : 2 (Fig. 73); the paracymbium is long, slender, and notched at its distal end (Fig. 74); the conductor has a termination which appears very different when viewed from different angles (Figs. 75-76).

Collection records. St. Catherine, Port Henderson, June, 1954 and November 16, 1958 (T. H. Farr); St. Andrew, August, 1954 (G. H. Proctor); Kingston, Mona Road, October 19, 1957; Kingston, Palisadoes area, October and November, 1957 (several times).



External Anatomy of *Tetragnatha*
Figures 71-76, *T. visenda*

FIG. 71. Cheliceral teeth of male.

FIG. 72. Cheliceral spur of male.

FIG. 73. Palpal patella and tibia of male.

FIG. 74. Paracymbium of male.

FIGS. 75-76. Two different views of tip of left cymbium of male with shape of conductor emphasized.

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